AN ALCOHOL TRAP FOR CAPTURING VESPIDS AND OTHER HYMENOPTERA[1]

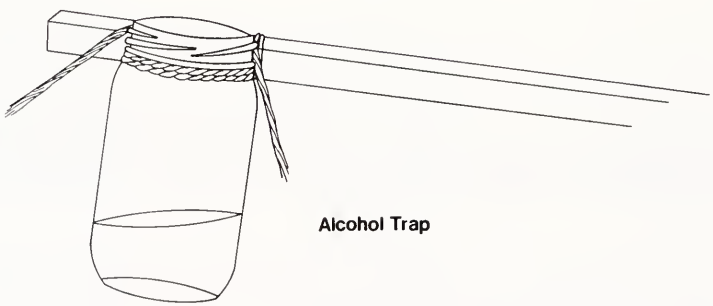
Jeffery W. Bentley[2]

ABSTRACT: A jar filled with alcohol and tied to a pole can be used to capture social wasps and other Hymenoptera. The method may be safer for some highly aggressive wasp species. Since the trap can be made from simple materials it is easily accessible to field workers in the tropics, and is a good way of getting specimens in alcohol for shipping. The technique was invented with the collaboration of Honduran small-scale farmers.

Some entomologists capture social wasps by gently laying the rim of an aerial net on the nest surface until a few workers crawl onto it out of "curiosity", then remove the net and sweep the wasps as they fly off it to return to the nest. Although if done carefully this method almost never alarms the colony, contact with the nest is necessary and that means slip-ups can occur (Robert Jeanne, personal communication). If the net bumps the nest the wasps may become alarmed and can attack (Jeanne 1981).

An alcohol trap solves the problem of how to capture vespids without risk of touching the nest and alarming the wasps, some of which are aggressive and their sting painful. A wide-mouthed container (like a fruit jar) is tied to the end of a pole and filled with 70% alcohol (Figure 1). I use

Figure 1



[1]Received July 27, 1991. Accepted March 10, 1992.
[2]Crop Protection Department. Escuela Agricola Panamericana. Apartado Postal 93. Tegucigalpa, Honduras. Central America.

isopropyl (rubbing) alcohol because it is easier to get in Honduras. When the trap is placed below the opening of the nest the field worker is (depending on the length of the pole) much farther away than if holding an aerial net. The alcohol trap is held still at the entrance to the nest, as close as possible without touching it so the wasps are not excited. As the wasps approach the jar (either in flight or from within the hive), the alcohol fumes intoxicate them and, depending on the species, individuals begin falling into the trap. A glass jar can be used, although clear plastic is lighter, which is important since the jar can seem heavy if held from the end of a long pole.

The method has been successfully used on several vespid species. *Agelaia cajennensis* (F.), *Polybia occidentalis* (Olivier), *P. diguentana* R. du Buysson and other *Polybia* spp. fall into the alcohol within a few seconds. Some *Mischocyttarus* species are so readily intoxicated by the fumes that care must be taken to withdraw the trap quickly before the entire population of the colony falls to its death. *Polistes major* Palisot de Beauvois and *P. instabilis* de Saussure, are somewhat more resistant to the alcohol fumes. They become intoxicated but often fail to fall from the nest. Although they may have to be prodded from the nest, the alcohol fumes still slow the *Polistes* spp. down and make them easier to capture. Hymenoptera die almost instantly in the alcohol, and since they are already in alcohol it is quite safe and easy to transfer the wasps from the trap to vials for shipping. One disadvantage of capturing social bees in alcohol is that the specimens' dense setae become matted.

The author, a cultural anthropologist, invented this method in stages, working with an entomologist and several Honduran farmers on an ethnoentomological study of Hymenoptera. After I brought back several decomposing specimens from the remote Rio Plátano area in January, 1991, Ronald D. Cave, the entomologist, suggested bringing specimens back in vials of alcohol. On a later collecting trip, in Dulce Nombre de Culmí, Olancho, Honduras, while transferring live Hymenoptera from a net to vials, Oscar Lagos (farmer and forest guard) and I noticed that the stingless bees *Scaptotrigona pectoralis*(Dalla Torre), *Plebeia latitarsis* (Frierse) (Hymenoptera: Apidae) and the social wasp *Protopolybia acutiscutis* (Cameron) (Hymenoptera: Vespidae) became intoxicated by alcohol fumes and we started using the alcohol vials instead of the net to capture other bees, including *Melipona beechei* (Bennett), *M. fasciata panamica* Cockerell, *Trigona pallens* (Fabricius), *T. jaty* Smith, *T. testacea orizabensis* (Stran), *T. amalthea* (Olivier) and *T. fulviventris* Guérin (Hymenoptera: Apidae). A vial of alcohol was held near the hive opening and the bees approached it and fell in.

In March, 1991, in El Quebrachal, Olancho, Honduras, another farmer, Santos Inestroza, noticed me collecting *Trigona* sp. with a vial and suggested that aggressive wasps could be collected in a similar way by tying a jar to a pole, to allow the person to be further away. Later that month in El Zamorano, Francisco Morazán, Honduras, a farm worker, Santos Carrasco, made the trap at my suggestion.

While there is a growing body of literature which suggests that agricultural scientists should work with farmers to design agricultural technology appropriate to farmers' conditions (Altieri 1984, Bentley and Andrews 1991, Biggs and Clay 1981, Chambers and Jiggins 1987, Marlton *et al.* 1988, Rhoades 1987, Richards 1989, to name just a few), apparently no one has ever suggested that farmers' innate knowledge and creativity can be tapped for developing tools for basic scientific research.

ACKNOWLEDGMENTS

Thanks to Ronald D. Cave for identifying the wasps, to S.W. Batra for identifying *T. jaty, T. testacea orizabensis, T. amalthea,* and to Charles D. Michener for identifying the other bees. The intellectual contributions of Ronald D. Cave, Oscar Lagos, Santos Inestroza and Santos Carrasco in the development of the alcohol trap are much appreciated. Ronald D. Cave, Robert L. Jeanne, Abelino Pitty, Paul Richards and Luis Vásquez read and commented on earlier versions of this paper. The drawing in Figure 1 is by Ana Isabel Acosta.

LITERATURE CITED

Altieri, M.A. 1984 Desarrollo de Estrategias para el Manejo de Plagas por Campesinos, Basándose en el Conocimiento Tradicional. CIRPON — Revista de Investigación 2(3-4): 151-164.

Bentley, J.W. and K.L. Andrews, 1991 Pests, Peasants and Publications: Anthropological and Entomological Views of an Integrated Pest Management Program for Small-Scale Honduran Farmers. Hum. Org. 50(2):113-124.

Biggs, S.D. and E.J. Clay 1981 Sources of Innovation in Agricultural Technology. World Development 9(4):321-336.

Chambers, R. and J. Jiggins 1987 Agricultural Research for Resource-Poor Farmers Part II: A Parsimonious Paradigm. Ag. Admin. and Exten. 27: 102-128.

Jeanne, R.L. 1981 Alarm Recruitment, Attack Behavior, and the Role of the Alarm Pheromone in *Polybia occidentalis* (Hymenoptera: Vespidae). Behav. Ecol. and Sociobiol. 9:143-148.

Matlon, P., R. Cantrell, D. King and M. Benoit-Cattin (eds.) 1988 Coming Full Circle: Farmers' Participation in the Development of Technology. Ottawa: International Development Research Centre.

Rhoades, R.E. 1987 Farmers and Experimentation. Discussion Paper 21. London: Agricultural Administration Unit. Overseas Development Institute.

Richards, P. 1989 Farmers Also Experiment: A Neglected Intellectual Resource in African Science. Discov. and Innov. 1(1):19-24.